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Value chain readiness key to circular economy transformation

Blog – Circular Economy

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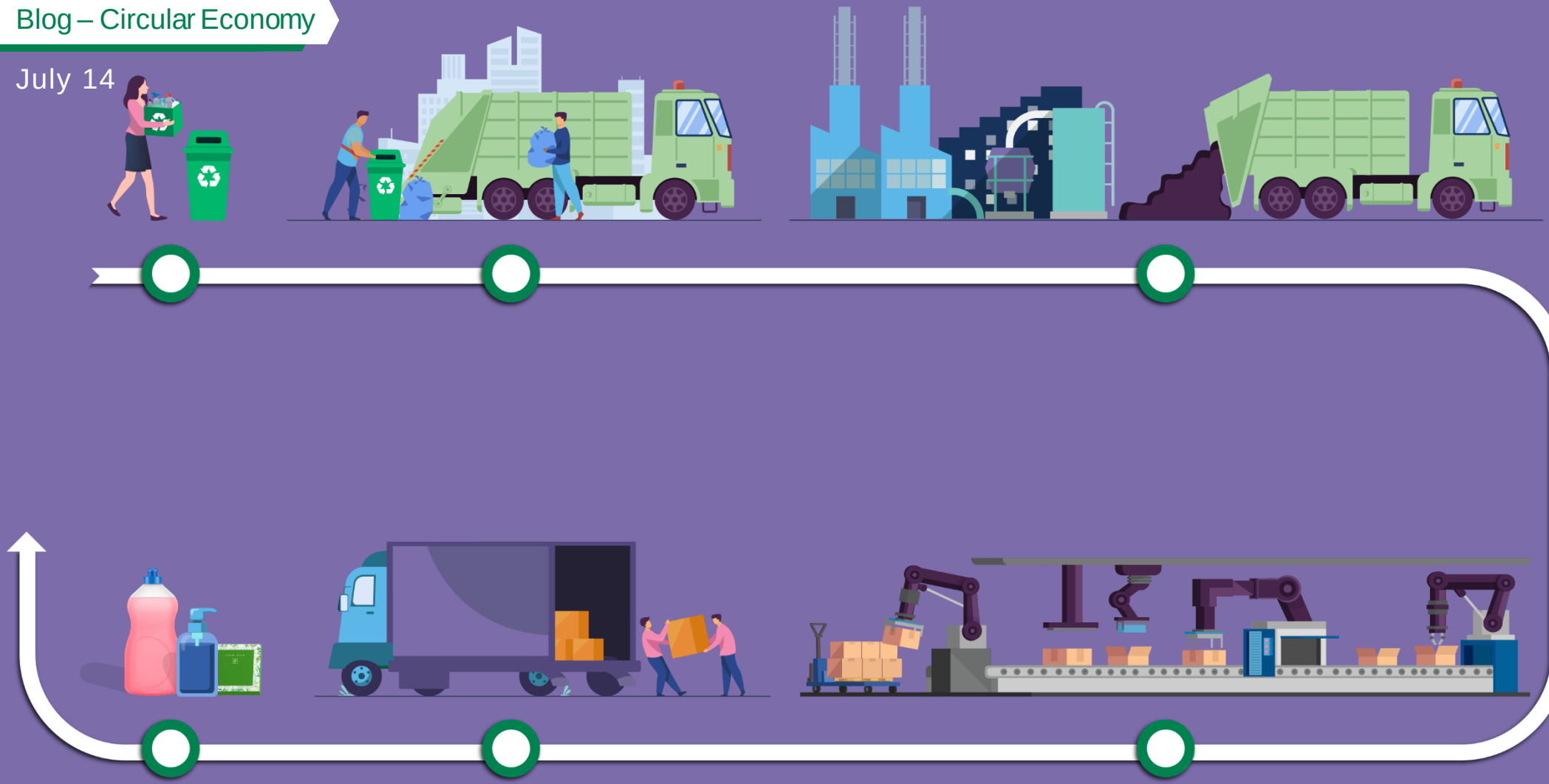


Innovation has been centric to many corporations around the world. Whether it was the invention of the steam engine, or the discovery of oil, innovations have driven multiple revolutions before. However, the speed of adoption of novelty was different from what the world witnessed during the ongoing Covid pandemic – the scientific community around the world started multiple programs, exchanged information at various stages of their vaccine discovery programs, governments worked out faster vaccine approval programs, hospitals pulled in their own resources to test and be ready for side effects, etc. The final consumer was also ready to put in his or her time, and change (consumption) habits in the interim. In other words, the entire value chain worked together to find a solution with the best and fastest chance of success.

Climate change is perhaps another ticking alarm, and therefore the cycle of innovation by companies cannot be slow or siloed. For example, the call for functional circular value chains has never been louder. Various governments around the world have announced their intent to penalize linear-only value chains, and we are seeing many companies across most industries trying to be compliant ahead of time. And although most of the companies around us are well adept at product and system innovation, circular transformation still presents a big challenge. One of the factors is that such a transformation affects the complete value chain and not a single segment of the ecosystem.

Take packaging as an example. Even though a retail-consumer-facing brand may want to switch immediately to packaging originating from recycled streams, it has many questions to answer before it can take the plunge. A few of these questions are:

01

How will the recycled content impact the quality of packaging?

The packaging quality will definitely be impacted because of recycled content; however, in certain cases that negative impact on mechanical attributes may be countered by the addition of other high performance materials. The residual impact may only be aesthetic in nature which may be a preference not a need. A thorough assessment of needs across the value chain and available resources will help to distinguish the true needs from wants.

02

Will the recycled content impact the packaging speed and will additional capex be needed to offset that reduced capacity?

An impact assessment check should not be limited to the apparent and immediate properties; it is the lateral and secondary impact which often plays a crucial role in swinging the readiness and willingness of the value chain players – in this case, that of the brand owner.

03

What is the cost impact of recycled packaging on the overall cost of packaging?

Even if the value chain is ready to accept the transformation, it is important to determine which players would shoulder the cost of the transformation. The cost may be spread across the value chain or passed on to the final consumer as a higher product price. In the latter case, it is essential to identify the markets where the consumers are willing to pay that additional price for more sustainable product.

Similar causal nests can be established for other sectors as well which want to transform to circular value chains – for example, the fashion industry or the furniture industry.

An early transformation will present a competitive advantage in the market and therefore warrants significant investment. However, a successful return on that investment will not just depend on the innovator and the rest of the value chain but also the consumer. The consumer will need to be informed enough about the necessity of circularity as a tool to fight the waste issue, and will need to consider the overall carbon footprint as a part of their purchase decision. The consumer may also consider the overall product carbon footprint beyond the packaging.

Going beyond the consumer, the true success of a circularity-intended transformation also hinges on the waste management part of the value chain. A switch to recyclable packaging does not often guarantee that the material will be recycled. The waste collection and sorting part of the value chain needs to be well established to effectively utilize the fruits of the innovation dollars spent on introducing recyclable packaging.

It is therefore important for companies to test their ideas for their impact across the value chain – both upstream and downstream of their process – to establish the need and willingness to change if they were to adopt the modified product. It is also important to do this value chain readiness check early enough in the process so as to adapt your innovation stream to cause the least pressure on the existing processes of your value chain partners.

The success of any circular transformational idea depends on its impact on various players across the value chain and is often attributed to more than one value chain segment at a given industry.

One way to address information exchange across the value chain is by forming research consortiums or business partnerships. For example, Solvay partnered with Veolia in its initiative to advance metal extraction during battery recycling. ExxonMobil recently announced its partnership with its customer Selene Group to advance the latter's project on recycle-containing Heavy Duty Sacks. Partnerships can also be noticed between brand owners and recycling companies - the association provides a perspective to the brand owner on the recycling / sorting challenges and they can identify the true transformation bottleneck.

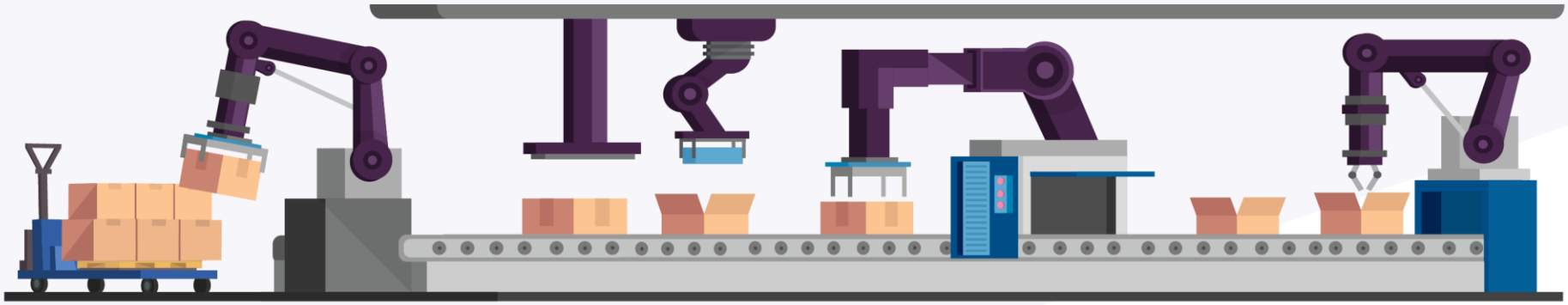
The value chain readiness exercise should enable the product developer to be better prepared while performing a cost-benefit analysis and determining the feasibility and probability of success of the new offer. A readiness check should uncover the salient features required by the market to have the ability to change and be willing to change. These points can be used by the development team to consider during designing and the launch teams to factor into their partner negotiations.

It is perhaps the fact that the success of a 'Circular' innovation is so keenly dependent on the rest of the value chain that the industry segments see more and more partnerships in this space.

Unknowns

The transition to circularity in the fashion industry has been slow because until recently garment manufacturers were only rarely taken in the development loop for recycling programs.

Which players in other sector value chains are not yet being factored into the circularity ideation?



A representative result obtained after conducting a value-chain readiness check for circularity transformation

	Polymers	Additives	Converters	Brand Owners	Consumers	Waste handlers	Recyclers
Current maturity	●●●●●●	●●●●●●	●●●●●●	●●●●●●	●●●●●●	●●●●●●	●●●●●●
Can they change?	●●●●●●	●●●●●●	●●●●●●	●●●●●●	●●●●●●	●●●●●●	●●●●●●
Willingness to change?	●●●●●●	●●●●●●	●●●●●●	●●●●●●	●●●●●●	●●●●●●	●●●●●●
Barriers to change?	High	High	Medium	Medium	Low	Low	Medium
New Investment?	High	High	Medium	Med-High	Low	Low	Low
Altered Process?	Yes	Yes	No	Maybe	No	Yes	Yes
Other concerns?				Speed			
Can I influence?	●●●●●●	●●●●●●	●●●●●●	●●●●●●	●●●●●●	●●●●●●	●●●●●●
How can I expedite adoption? (Invest / Partner / Provide tech)	Partner	Partner	Partner / Provide tech	Partner / Provide tech		Invest / Provide tech	Invest / Provide tech

Colour Codes: Poor — High

A well-designed value chain readiness check should be conducted not only during the innovation stage, but also the commercialization stage of any product or process advancement. Referring again to the packaging industry example, if a consumer goods company wants to adopt a recycled-content packaging, it would want to know what the impact of the change on its machinery would be as well. For instance, if a multilayer recycled-containing PE only structure replaces a PET-PE structure, it would have an impact on the resultant stiffness of the structure and may need to be run at a different speed at the brand-owner's FFS machine. Even a 5% decline in the FFS speed can be costly for the operator – additional shifts or additional capex being required to make up for the reduced operational rate.

If an innovation is launched without a readiness check across the entire value chain, the consequences can sometimes be catastrophic. For example, if a stretch hood used to overwrap pallets was transformed to recycle-containing film without testing for transport safety, a road incident could result in casualties. In other less complicated situations, **results can be unplanned expenses, stalled launches, unnecessary delays or unrealized potential of innovations being deployed.**

A comprehensive value chain readiness check may seem to be a daunting task and from the outside, may appear to be a deterrent to the fast pace of transformation needed in order to meet the commitments and targets declared for circularity. A partnership approach may work with the immediate upstream and downstream partners of the value chain, but getting inputs from the customers' customers or lateral influencers like the OEMs may prove to be time consuming and intermittent. To circumvent such challenges, having external support to conduct the value chain readiness check often proves to be wise investment.

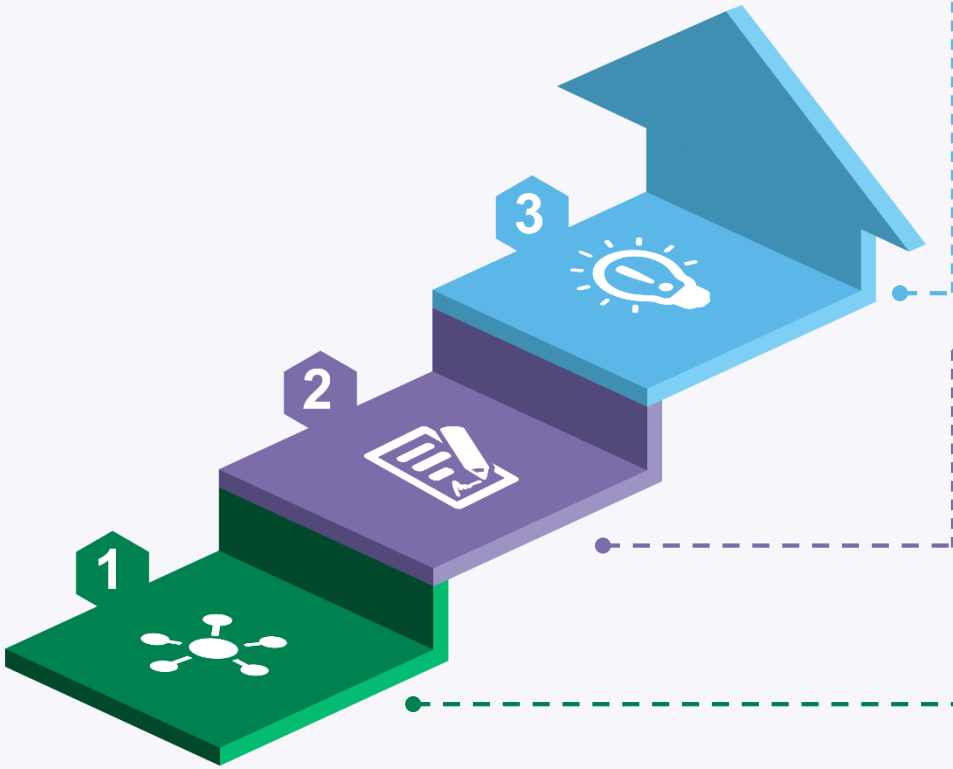
The external view point may help on multiple fronts – it provides a neutral and a collective viewpoint from across the value chain. Often, the external help is specialized in mapping the

Unknowns

Many sectors remain divided on how to approach circularity – for example, to reduce chemical use in agriculture, should we revert back to pre-industrial techniques or accelerate precision farming techniques? How could an external view help a sector negotiate different viewpoints?

transformation pieces and identifying any gaps early-on in the process. Another advantage is the ability to carry out multiple pieces of the readiness check together as the external specialists often have the strength of scaling up project teams in a short span of time which many corporates have a paucity of.

A potential framework for conducting an early-stage value-chain readiness



Impetus of change

Gauge what will take for you to drive the value chain to adopt your solution

- Understand how and where you can influence the value chain transformation.
- Should you sponsor participation? Or be a technology provider to existing players to upskill them?

Speed of change

Assess the willingness of your value chain partners to change and gauge the ease of change

- Identify the voids in the value-chain which are creating bottlenecks to complete transition.
- Earmark what change means for the rest of the value chain and determine how smooth or rough the transition can be.

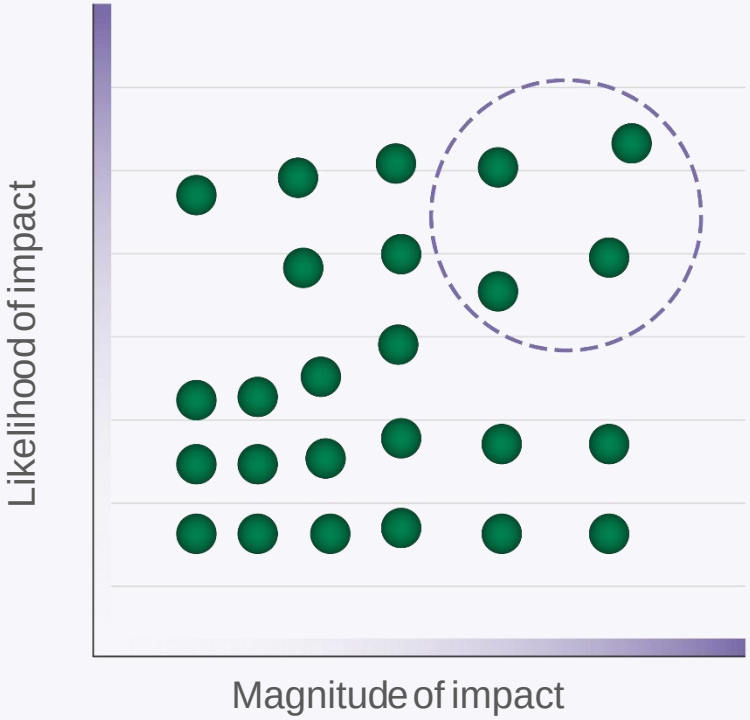
Need to change

Assess if, and how, the value chain will need to adapt their processes for your solution to be successful

- Is the current value chain linear or circular or in transition? What are the other transformational initiatives in the market? Should you partner or compete with existing efforts?

The concept of value chain readiness can not only be used to prioritize internal innovation, but can also be used to gauge the impact of new disruptors in the industry. While disruption monitoring is now a steady state program across many companies, if performed only as a base scan, it can often lead to information noise adding little value to the preparedness of the sponsors of such programs.

A smart disruption monitoring program is best initiated as a scan across several segments of the value chain and then proceeds to gauge the likely impact of the disruptors identified. In the domains of packaging, textiles, personal care and homecare, a simple scan of potential disruptors may yield more than 100 candidates. But is each of those 100-odd ideas likely to make a big impact in the market? Possibly not. Therefore, the identified disruptors must be assessed on an initial scale of magnitude vs likelihood of impact before a detailed value chain readiness check is initiated as a part of being future-ready.



A lean set of potential disruptors with a high magnitude of impact and simultaneously also having a high likelihood of occurrence

These disruptors can become industry game changers in the future, and hence are best assessed comprehensively to understand the likely speed of impact across the value chain.

Conclusion

Innovation is key to industry leadership – and currently, there is a rapidly growing expectation that industry leaders from every sector demonstrate their capability to transform linear value chains to circular value chains. **Uncharacteristically, sector leaders will not be able to effect the said transformation by themselves, but by building confidence in the proposed transformation across the value chain.** This is only possible when the true challenges are heard through an in-depth value chain readiness check which is best performed at early stage innovation gates and throughout the disruption monitoring process..

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